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RSC16x series

User Manual

RS485 Control Perfect Solution



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Chapter 1 Products Introduction

Lederaa offers series RSC16x as the best solution for the networking LED lamp. By the RS485 interface, you can unite all the net LED lamps to proceed the programs like marquee, flash etc. Controlling the system of the net LED lamps to do the various functions, you can also use relative software to edit action and pattern with individual PC. The following are the main functions of series RSC16x.

RSC165 (RS485 Controller)

- RSC165 is a combo-controller of RS485, once you purchase the LED lamp which has RS485 function, you can make all the LED lamps do the synchronous change by RSC165.
- RSC165 has got 20 different modes, such as marquee, random color, gradient... etc. RSC165 is extensible for update firmware, more than that; The mode program can be rewrite as requests.
- To control more LED lamps, you can go with RSC167 to increase the signals as the driver of RSC165 is not capable enough.

RSC166 (USB->RS485 Converter)

- RSC166 is an USB->RS485 converter with USB port (1.1/2.0), which can control the LED lamps by transforming the signals to RS485.
- With LEDERAA particular LED lamp control program, clients can do whatever they want with the lamps by software.
- To control more LED lamps, you can go with RSC167 to increase the signals as the driver of RSC166 is over-drive.
- While applying to a large system (commercial-board), you can string up RSC165 by X-Y coordinate to have advance control of lamps.

* see figures from Chapter 1-2.

RSC167 (RS485 Repeater)

- RSC167 is the function of RS485 signal that mainly extend the drivers of RSC165/RSC166, and make more lamps work.
- Each RSC167 can string up to 32 LED lamps, or 32 RSC167 to enlarge the number of lamps.

1-1. RSC165 Introduction

Products Features:

1. Six buttons, LCD screen, intelligent and friendly human computer interface
2. 20 modes to choose from.
3. You can easily set up to 5 functions that correspond to hot keys (F1~F5).
4. Low power, for both AC and DC, wide-ranging of voltage, easy to install.
5. Distribute by terminals plug, you can simply put it on the wall.

Apply condition:

1. Synchronous control under small loop (<126LED lamps)
2. Multi-functions needed, such as marquee, flash, gradient...etc.
3. Operate individually without PC.

System form:

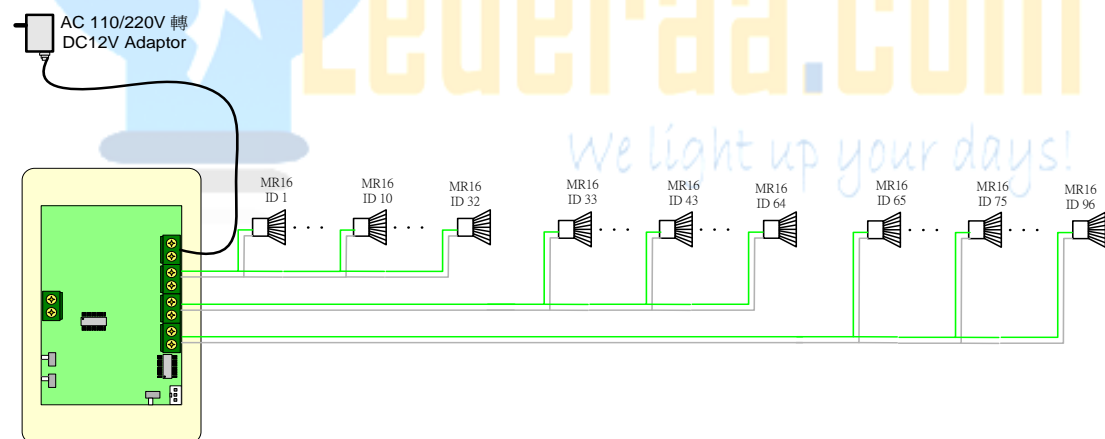


diagram1-1-1. Apply with RSC165



1. This diagram indicates that the LED lamp will still require the power supply, since the interface of RS485 can't provide it. Please beware of that when using.
2. RSC165 will also require power supply and 110V/220V to 8~20Vdc transformer is recommended.
3. The diagram above is optional for "-96", which contains 3 sets of RS485 ports, therefore, it can string up to 96 lamps. You won't need this option if the number of lamps is less than 32.

1-2. RSC166 Introduction

Products Features:

1. USB interface, consist 1.1/2.0.
 2. With Lederaa particular LED lamp control program LEDwizard, clients can do whatever they want with the lamps.
 3. Direct output USB to RS485.
 4. Low power, USB power supply.
 5. Separating terminal design, distribution trouble-free.
-

Apply condition:

1. Lamps variation control by PC connection.
 2. Large system or number of lamps (>500), extensible with 165 and RSC167.
 3. Controlling the lamps variation by writing a program.
-

System form:

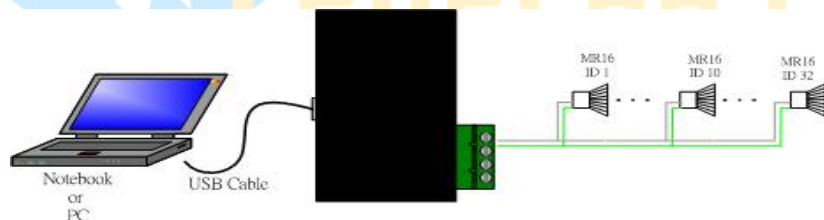


diagram1-2-1. Apply with RSC166

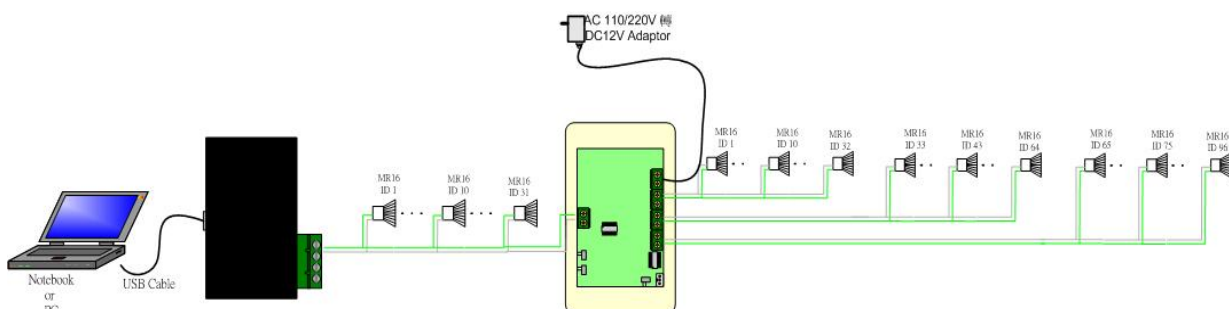


diagram1-2-2. RSC166 strings up



This diagram indicates that the LED lamp will still require the power supply, since the interface of RS485 can't provide it. Please beware of that when using

1-3. RSC167 Introduction

Products Features:

1. Offer the function of fan-out to increase the control-ability of RSC165/166.
2. Low power, for both AC and DC, wide-ranging of voltage, easy to install.
3. Separating terminal design, distribution trouble-free.

Apply condition:

1. When RSC165 is needed to control more than 32 lamps, it can string up RSC167 to raise the signal.
2. When RSC166 is needed to control more than 32 lamps, it can string up RSC167 to raise the signal.
3. To lengthen the distance by string up RSC167 when it's over 300m.

System form:

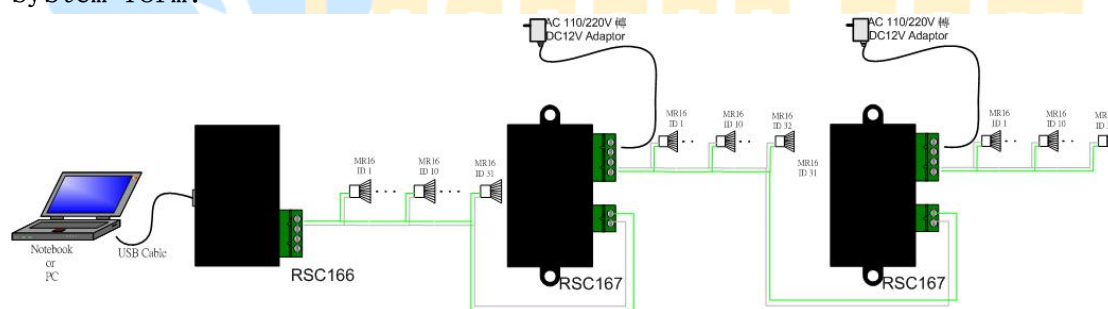


Diagram 1-3-1. RSC166 strings up RSC167

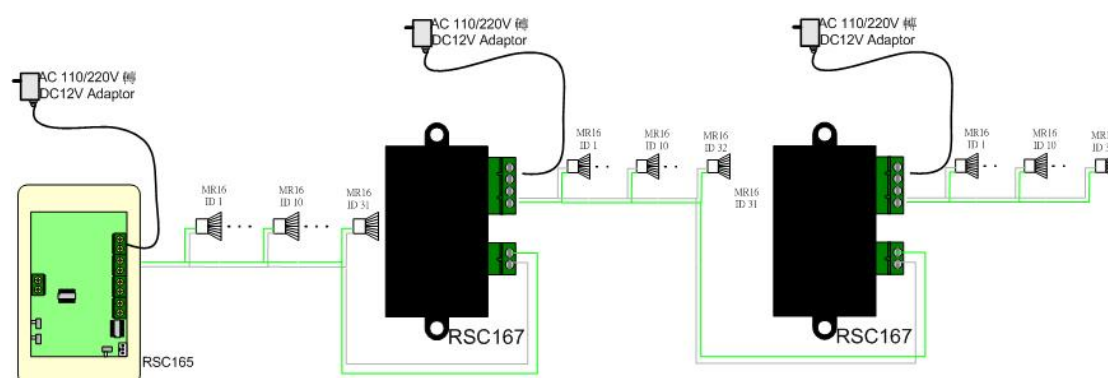


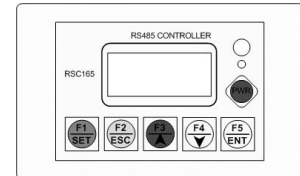
Diagram 1-3-1. RSC165 strings up RSC167



This diagram indicates that the LED lamp will still require the power supply, since the interface of RS485 can't provide it. Please beware of that when using

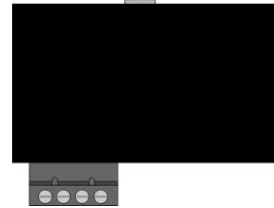
Chapter 2 Product Specification

2-1. RSC165 Specification



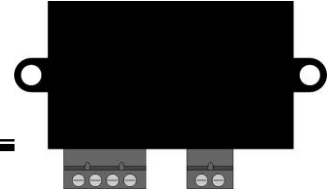
parameter	value	unit	remarks
Function specification			
User interface	6 Keys + 8*2 Text LCD , IrDA Remote Control		
Input interface	Half-Duplex RS485 port(Default) * 1		
Output interface	Half-Duplex RS485 port * 1		
Numbers of driver device	>Lamp * 32 or RSC165 * 32		
Total wiring distance	>300	meter	
String function	Yes		Can be accepted by RSC165 or other RSC165
Key-in program	>= 8 sets		Can be added by update program
Power specification			
Standard input voltage	9~18Vdc or 8~15Vac	V	
Maximum input voltage	24 Vdc or 20 Vac	V	It'll burn up if the input voltage is larger than maximum.
Input current	<100mA	mA	
Power consumption	< 1W	W	
Environment specification			
Working temp.	0~50	°C	
Store temp.	-20~60	°C	
Working humidity	10~90	%	Condensing condition excluded
Size	126.3 * 76.2 * 40	mm	
Weight	<0.5	Kg	
Optional			
-96	Half-Duplex RS485 port * 3 (Total Fan out = 96 device)		

2-2. RSC166 Specification



parameter	value	unit	remarks
Function specification			
Input interface	USB 1.1 / 2.0		Mini-USB plug
Output interface	Half-Duplex RS485 port * 1		
Numbers of driver device	> Lamp * 32 or RSC165 * 32		
Total wiring distance	>300	meter	
Power specification			
Standard input voltage	5Vdc	V	USB power supply
Input current	<100mA	mA	
Power consumption	< 0.5W	W	
Environment specification			
Working temp.	0~50	°C	
Store temp.	-20~60	°C	
Working humidity	10~90	%	Condensing condition excluded
Size	88 * 43.8 * 26.6	mm	
Weight	<0.5	Kg	

2-1. RSC167 Specification



parameter	value	unit	remarks
Function specification			
Input interface	Half-Duplex RS485 port * 1		
Output interface	Half-Duplex RS485 port * 1		
Numbers of driver device	> Lamp * 32 or RSC165 * 32		
Total wiring distance	>300	meter	
Power Specification			
Standard input voltage	7~12Vdc or 7~10Vac	V	
Maximum input voltage	15 Vdc or 12 Vac	V	It'll burn up if the input voltage is larger than maximum.
Input current	<100mA	mA	
Power consumption	< 1W	W	
Environment Specification			
Working temp.	0~50	°C	
Store temp.	-20~60	°C	
Working humidity	10~90	%	Condensing excluded condition
Size	88 * 43.8 * 26.6	mm	
Weight	<0.5	Kg	

Chapter 3 Installation Consideration

The product of this series has the precise circuits which are controlled by micro processor. For the safety concern, please read the following before using to avoid the risk of damage.



1. The product is used regularly (non-switch off condition), therefore; there's no power switch design for it. Please turn the power off when first time distributing the wire for safety reason.
2. Please do following the specification above to supply the power to our products. Be sure that the voltage is between the correct values, otherwise it might burn up when the voltage is too high, and it might not work properly when the voltage is too low.
3. RSC165 and RSC167series are for both AC and DC, please feel free when using!



1. To avoid the man-made static caused damage, please do not touch any IC component when pick up RSC165.
2. RS485 interface can drive many devices, is noise resistant, and can be used for long distance data transmission, but there's still restriction of Fan-Out(drive) and total distance. To avoid the controlling unstable situation, please do follow the specification when using.

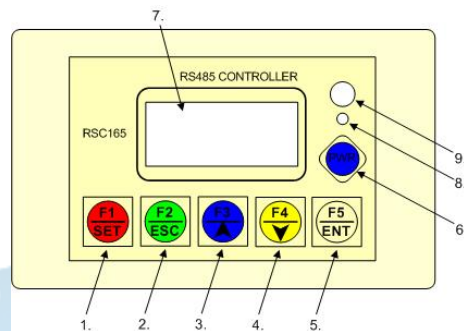


1. If there's any operating problem, please read through the fault clearing from the appendix. Follow the steps to solve the problem.
2. Please contact with our stuff or technicians if your problem solution is not written in the appendix. Thank you for purchase our products.

Chapter 4 Hardware Installation

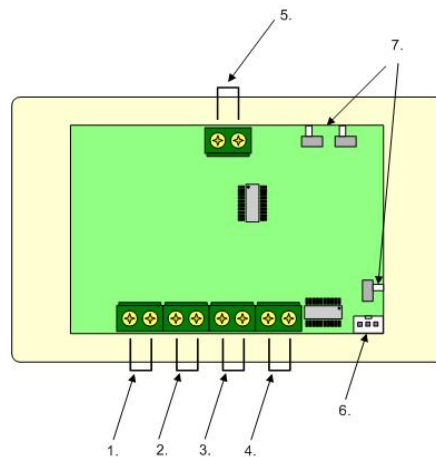
4-1. RSC165 Install guide

4-1-1. Front Cover Details



Number	Name	Use		Remarks
1	F1	Normal mode	Hot key of first mode	
		System mode	Press and hold for 2sec.to enter the system mode	
2	F2	Normal mode	Hot key of second mode	
		System mode	Exit the system mode (without any saving)	
3	F3	Normal mode	Hot key of third mode	
		System mode	Select upwards	
4	F4	Normal mode	Hot key of fourth mode	
		System mode	Select downwards	
5	F5	Normal mode	Hot key of fifth mode	
		System mode	Enter button	
6	PWR	On/Off control of all the LED lamps under the RSC165		
7	LCD window	process message display		
8	POWER	Green light ON	Indicate all the lamps OFF	Easy to find in the dark
		OFF	Indicate all the lamps ON	
9	Infrared window	Receiving the infrared signal by LED lamp remote control		

4-1-2. Rear Cover Details



Number	Name	Use	Remarks
1	Power input terminal	Supply the power to RSC165	8~20V (AC/DC sharing)
2	1 st RS485 output terminal	1 st RS485 output, can drive 32 devices	Please beware of the polar
3	2 nd RS485 output terminal	2 nd RS485 output, can drive 32 devices	Please beware of the polar
4	3 rd RS485 output terminal	3 rd RS485 output, can drive 32 devices	Please beware of the polar
5	RS485 input terminal	Accepting the RS485 input internal which controlled by RSC166 or other RSC165	Please beware of the polar
6	Firmware download connector	Firmware upgrade	Please do not upgrade it by yourself (staff only)
7	Upgrade mode switch	Firmware upgrade switch on/off	Please do not upgrade it by yourself (staff only)



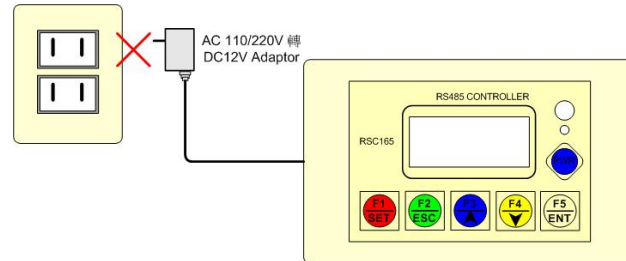
* Please beware of the polar of RS485 connector.



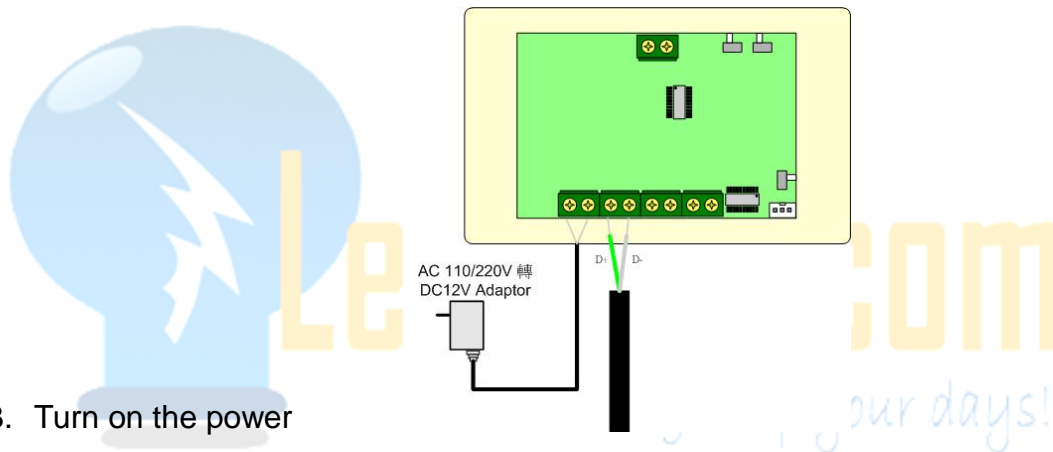
* It's recommended not to upgrade the function of firmware by your own, since RSC165 might not work properly. Please ask technicians for help

4-1-3. RSC165 Hardware Installation Steps

1. Confirm the power supply of RSC165 is cut off first

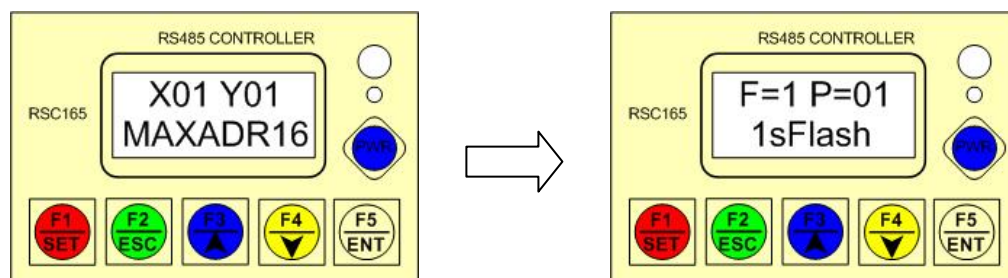




2. Lock both power and RS485 signal wires to the terminal board that corresponds *(refers to the details above)*



3. Turn on the power

4. Make sure the screen is working normal like pictures below

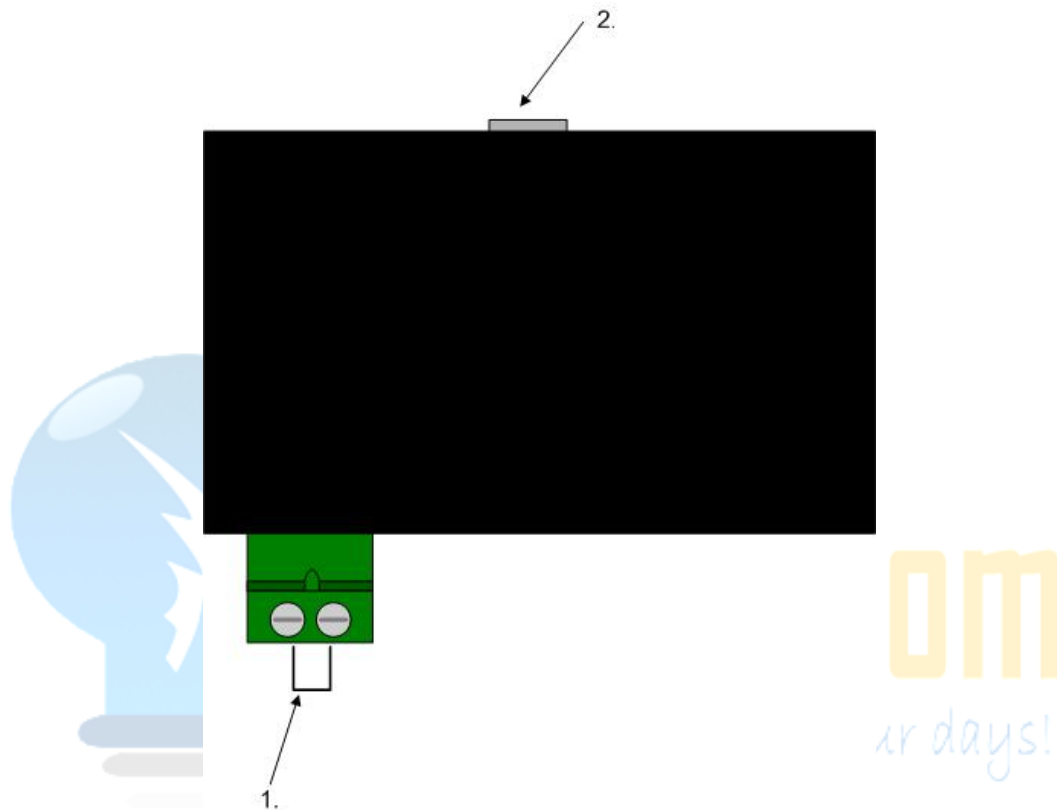


5. Hold  for 2 seconds; make sure all the LED lamps can be turn off.
Press  again to confirm that all the lamps can be turn on.

6. Ready for use *(refers to chapter 5)*

4-2. RSC166 Install Guide

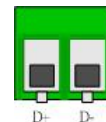
4-2-1. Appearance Details



Number	Name	Use	Remarks
1	RS485 output terminal	Output terminal of RS485 interface	Please beware of the polar
2	USB input terminal	USB plug, USB interface for PC connecting	



* Please beware of the polar of RS485 connector



4-2-2. RSC166 Hardware Install Steps

1. A software driver will be needed when connecting RSC166 the first time. The software can be downloaded on-line.
2. Take off the separate terminal board, and lock the RS485 signal wire of the LED lamps to the terminal board that corresponds.
3. Put the terminal board back to RSC166
4. Start the LED control software to make sure that LED lamps can be controlled



4-3. RSC167 Install Guide

4-3-1. Appearance Details

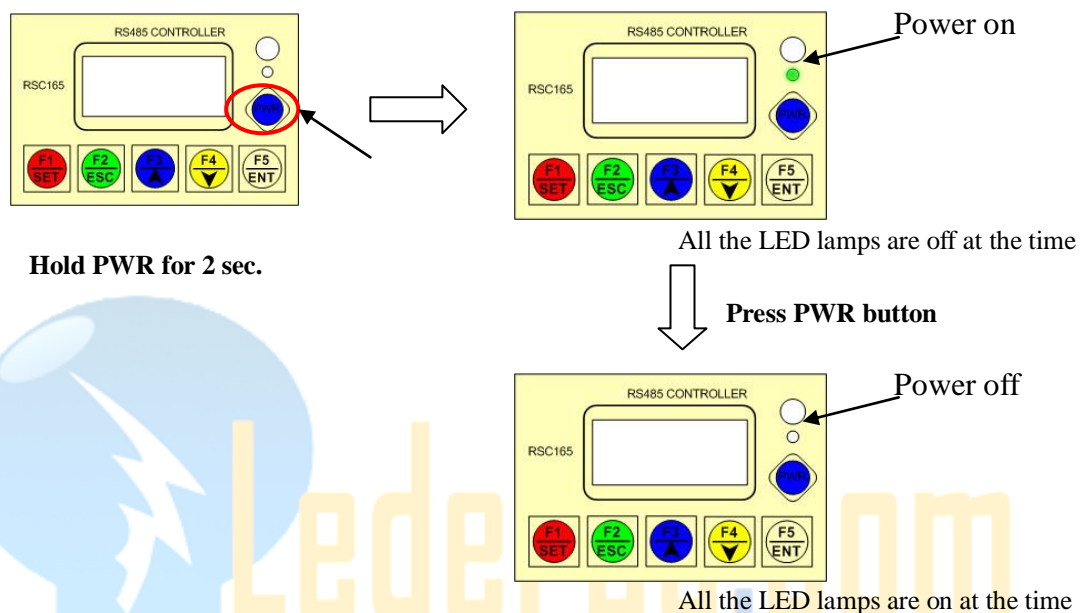
Number	Name	Use	Remarks
1	Power input terminal	Power supply for RSC167	8~12V (AC/DC sharing)
2	RS485 output terminal	Output terminal of RS485 interface, strings up LED lamps	Please beware of the polar
3	RS485 input terminal	Input terminal of RS485 interface, receiving the signal from RS485	Please beware of the polar

Please beware of the polar of RS485 connecter

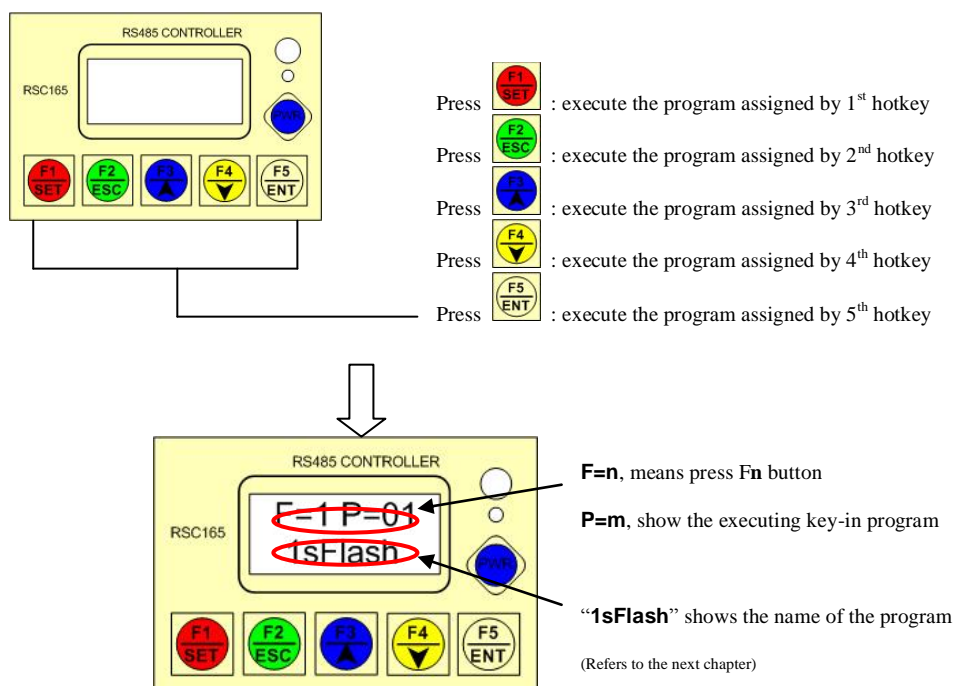
D+D-

Chapter 5 Operation Guide

5-1. Switch On/Off Multi Color lamp

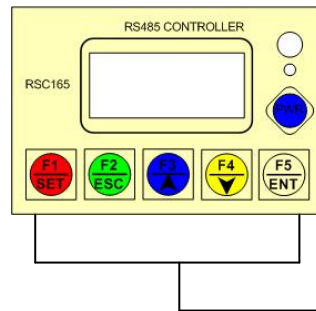


5-2. How to Choose a Program



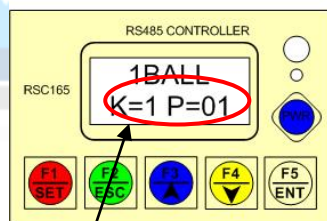
5-3. How to Set the Program to Hot-key

1. Select the hot-key you want to set your program to, then press and hold the button

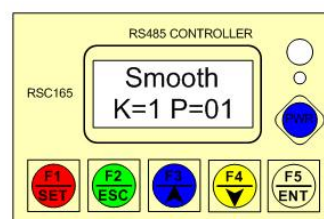
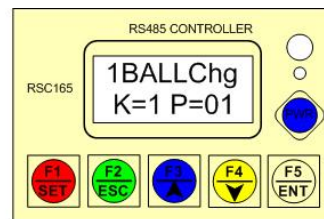


- | | | |
|------|--|---|
| Hold | | 2sec : Set the program assigned by 1 st hotkey |
| Hold | | 2sec : Set the program assigned by 2 nd hotkey |
| Hold | | 2sec : Set the program assigned by 3 rd hotkey |
| Hold | | 2sec : Set the program assigned by 4 th hotkey |
| Hold | | 2sec : Set the program assigned by 5 th hotkey |

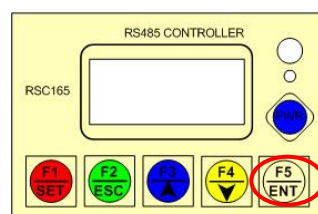
2. Press up and down(F3,F4) to select the function(all the lamps will do the action assigned by the selected program)



It'll flash when entering the hotkey function setting



3. Press ENT(F5) to confirm the program to the hotkey



Press ENT to finish the setting

5-4. Remote Control (IRC160)

RSC165 has the infrared window which can receive the signal from IRC160, then control all the LED lamps of RSC165

Aim the remote control to the RSC165 receive window (figure5-4-1), and press the function required, all the LED lamps will change to the particular color (or mode) at the same time

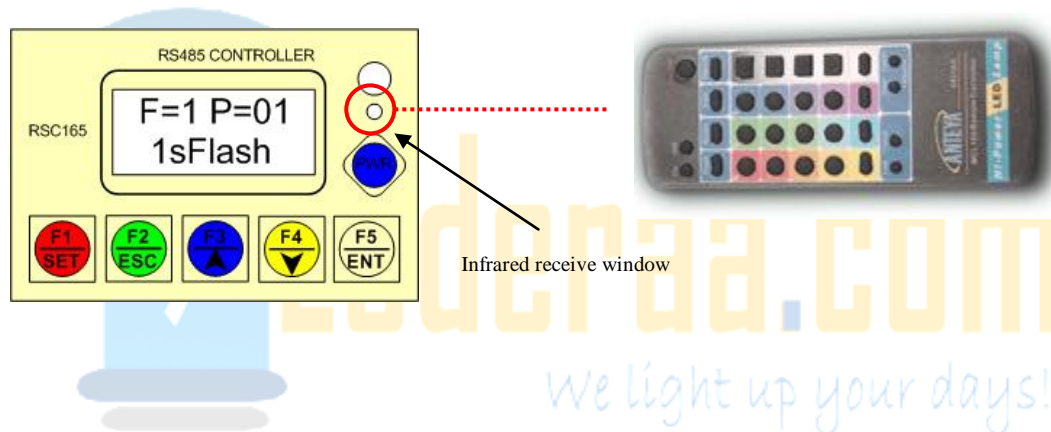


Figure 5-4-1. Use IRC160 to control the lamps through RSC165

Chapter 6 Advance Operation

6-1. Use RSC165 to set the ID of LED lamps

1. Tools required:

- a. RSC165 * 1
- b. IRC160 * 1 (remote control for LED lamps)

2. Function explanation :

Each lamp ID can be set when it has the RS485 function. The correct ID is needed to operate some key-in function (e.g. marquee), this section will explain how to use RSC165+IRC160 to set the ID of LED lamps.





The fixed ID is “1” as the LED produced, (vary only if request)



3. Setting Explanation:

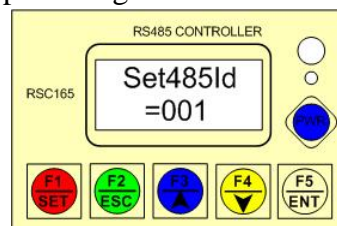
- a. It's important to remember that aim only the LED lamps you want when you're setting the ID of RSC165 by the remote control. Otherwise, all the lamps that string together will be set as one ID.



The ID can only be set when the power of LED lamps and RSC165 is on.

- b. Turn on the power of LED lamps and RSC165; aim IRC160 to the infrared window of RSC165. Press  button on IRC160, then the LED lamps will flash to enter the ID setting mode. If you want to quit at this stage just press  button.

- c. When the power of RSC165 is on, hold  for 2sec. to enter the option “Set485Id” (figure below). Press up and down to select the ID and press  ; LED will stop flashing to finish the setting.



6-2. Set the Maximum ID Number

1. Function Explanation:

Under some functions (e.g. marquee), RSC165 must know how many ID are in the loop to make sure the function can run correctly to the last lamp then jump to the next mode. This part of the chapter is mainly narrating how to set the maximum ID number.




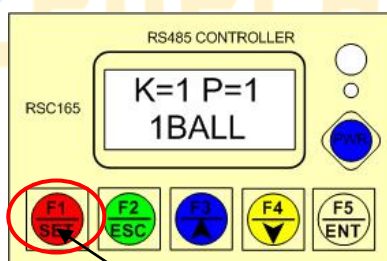
1. The fixed ID number is "16" as RSC165 produced.
2. The marquee function might not run it to the last lamp or stocked for a while to get to the next mode when the maximum ID is incorrect.




The value is the maximum value of LED lamp ID which connected by RSC165, not the number of lamps. (The maximum lamp number might be different from the maximum ID for special action sometimes) Please beware of it!

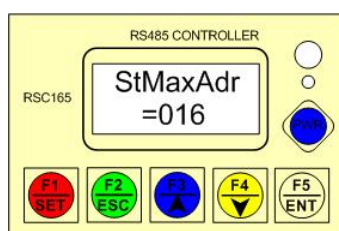
2. Setting Explanation:




- a. Hold  2sec. to enter the setting mode



Hold it for 2sec.

- b. Press twice  to enter the maximum ID setting mode (StMaxAdr), like figure below



- c. press   to select the number, then press  to finish the setting

6-3. Set the Extensible ID of RSC165 (X-Y coordinate)

1. Function explanation

Under a larger system (e.g. LED commercial-board), RSC165 must set the ID coordinate (it'll be the ID of RSC165 itself, has nothing to do with the ID of LED lamps)

Once the X-Y coordinates are set, the lamps that connected to RSC165 will be placed as one group. Combining RSC167 to increase the signal, then one group can connect 126 lamps.

The limit of X-Y ID coordinate is X=126, Y=126, therefore in this kind of ID setting, the maximum number of lamps is :

$$126(\text{X coordinate}) * 126(\text{Y coordinate}) * 126(\text{lamp ID}) = 2,000,0376$$

This part of the chapter is narrating how to set the X-Y coordinate ID




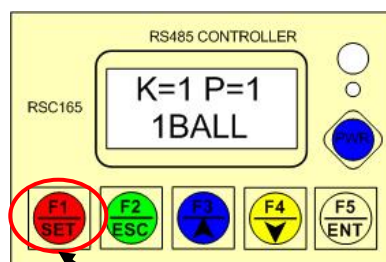
X = 1, Y = 1 fixed coordinates as RSC165 produced





If the value is incorrect, the LED action will be mistaken under a big system. If it's only RSC165, it won't have any effect.

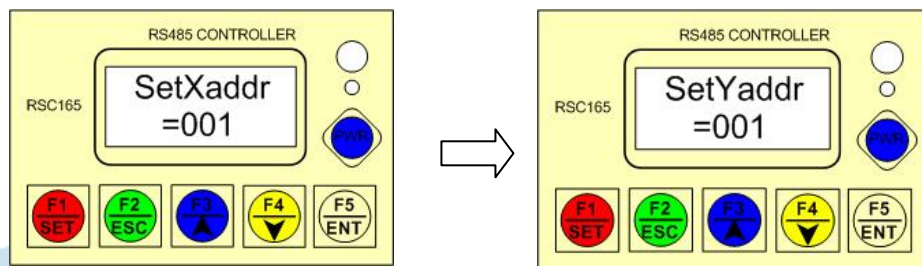
2. Setting Explanation:

1. Hold  for 2sec. to enter the setting screen



Hold it for 2sec.

2. Press  3 times to enter the X coordinate setting screen (figure below), and press up or down to select the ID of X coordinate needed
3. Press  again to enter the Y coordinate setting screen (figure below), and press up or down to select the ID of X coordinate needed
- 4.



5. press  to finish setting

